SHARP®

MODEL

CS-2870

ELECTRONIC PRINTING CALCULATOR

OPERATION MANUAL

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This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

WARNING – FCC Regulations state that any unauthorized changes or modifications to this equipment not expressly approved by the manufacturer could void the user's authority to operate this equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.
These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FOR YOUR RECORDS . . . . .
For your assistance in reporting this electronic calculator in case of loss or theft, please record below the model number and serial number which are located on the bottom of the unit. Please retain this information.

Model Number _____ Serial Number _____

Date of Purchase _____ Place of Purchase _____

INTRODUCTION

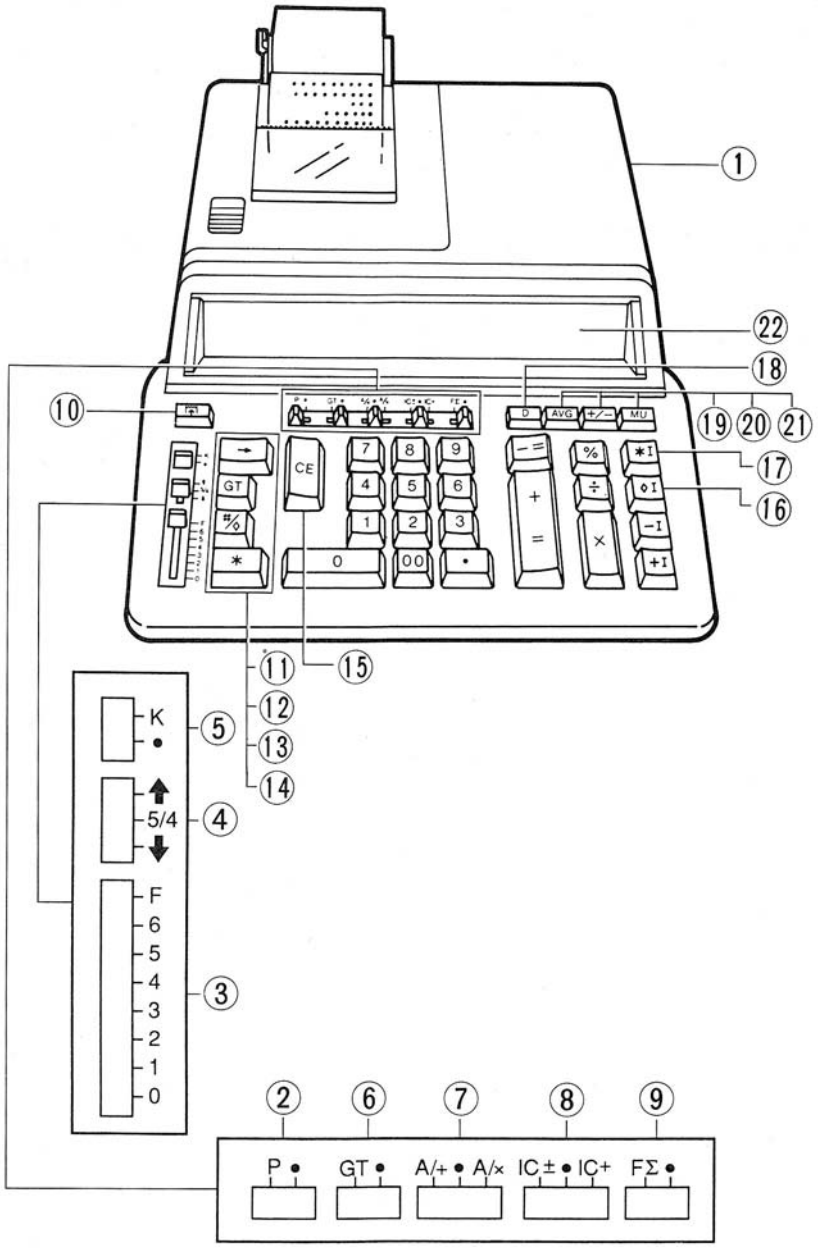
Thank you for your purchase of the SHARP electronic calculator, model CS-2870. Your SHARP calculator is specially designed to save work and increase efficiency in all business applications and general office calculations. Careful reading of this manual will enable you to use your new SHARP to its fullest capability.

OPERATIONAL NOTES

To insure trouble-free operation of your SHARP calculator, we recommend the following:

1. The calculator should be kept in areas free from extreme temperature changes, moisture, and dust.
2. A soft, dry cloth should be used to clean the calculator. Do not use solvents or a wet cloth.
3. Turn off the power switch prior to connecting or disconnecting the AC cord.
4. If service should be required on this equipment, use only a SHARP servicing dealer, a SHARP approved service facility or SHARP repair service where available.

THE KEYBOARD



OPERATING CONTROLS

①

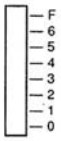
POWER SWITCH

②

PRINT MODE SELECTOR:

"P": Set to the print mode.
("• • • . . . • • • +P" will be printed.)

"•": Set to the non-print mode.
("• • • . . . • • • –P" will be printed.)

③ 

DECIMAL SELECTOR:

Presets the number of decimal places in the answer.
In the "F" position, the answer is displayed in the floating decimal system.

④

ROUNDING SELECTOR:

Set decimal selector to "2".
4 ÷ 9 = 0.444 ... , 5 ÷ 9 = 0.555 ...

	4 ÷ 9 ±	5 ÷ 9 ±
↑	0.45	0.56
5/4	0.44	0.56
↓	0.44	0.55

Note: The decimal point floats during successive calculation by the use of × or ÷.
If the decimal selector is set to "F" then the answer is always rounded down (↓).

⑤

CONSTANT MODE SELECTOR:

"K": The following constant functions will be performed:

Multiplication: The calculator will automatically remember the first number entered (the multiplicand) and × instruction.

Division: The calculator will automatically remember the second number entered (the divisor) and ÷ instruction.

Add-on/Discount/Mark up:
The calculator will automatically remember the first entered number and key functions for Add-on/Discount/Mark up calculation.

"•": Neutral

⑥ GT •

GRAND TOTAL MODE SELECTOR:

"GT": This selector will accumulate the following:
("∗+" will be printed.)

1. Addition and subtraction totals obtained with [∗] or [AVG] .
2. Product and quotient totals obtained with [±] or [-=] .
3. Answers obtained with [%] or [MU] .

"•": Neutral

⑦ A/+ • A/x

ADD MODE SELECTOR:

"A/+" – **Effective only in addition and subtraction:**

Use of the A/+ mode permits addition and subtraction of numbers without an entry of the decimal point. When the A/+ mode is activated, the decimal point is automatically positioned according to the decimal selector setting.

EXAMPLES: Set A/+-•-A/x to A/+

A. Set decimal to 2

Enter	123456 [±]	Tape prints	1,234.56 +

B. Set decimal to 3

Enter	123456 [±]	Tape prints	123.456 +

Use of [·] , [×] , and [÷] will automatically override the Add mode and decimally correct answers will be printed at the preset decimal position.

EXAMPLES: Set A/+-•-A/x to A/+, 5/4

A. Set decimal to 2

Enter	.1234 [×]	Tape prints	0.1234 x
	100 [±]		100. =
			12.34 ∗

B. Set decimal to 3

Enter	2 [÷]	Tape prints	2. ÷
	3 [±]		3. =
			0.667 ∗

C. Set decimal to 2

Enter	123 [±]	Tape prints	1.23 +
	10 [·] [±]		10.00 +
	↑ [∗]		11.23 ∗

Note that decimal point was entered.

"A/x" – **Multiplication and division:**

When the A/x mode is activated, the number entered before [×] or [÷] will override the add mode. But the number entered following [×] or [÷] and before [±] (or [-=] , [+I] , [−I]) will obey

the decimal setting. This is useful for invoicing.

EXAMPLE: Set A/+-•-A/x to A/x

Set decimal to 2

Enter	7 [×]		Tape prints	7· x
	3 [±=]			0·03 =
				0·21 *

Note: Use of [·] will automatically override the A/x mode.

Addition and subtraction:

The A/x mode functions same as the A/+ mode.

"•": Neutral

⑧ IC± • IC+

ITEM COUNT MODE SELECTOR:

"IC±": 1) The counter will count the number of times that [±=] has been pressed in addition.

Note: • Each time [-=] is used in subtraction, 1 will be subtracted from the count.

• The count is printed when the calculated result is obtained.

• Pressing of [*], [×], [÷], [AVG] or [MU] clears the counter.

2) When the grand total mode selector is in the ON position (GT), the counter will count the number of times that the calculation results have been stored in the grand total memory. To print and clear the count, press [GT].

3) The memory item counter will count the number of times that [+I] has been pressed in the addition.

Note: • Each time [-I] is used in the substraction, 1 will be subtracted from the count.

• The count is printed when the memory is recalled.

• Pressing of [*I] clears the counter.

"IC+": 1) The counter will count the number of times that [±=] or [-=] has been pressed in addition and subtraction.

Note: • The count is printed when the calculated result is obtained.

• Pressing of [*], [×], [÷], [AVG] or [MU] clears the counter.

2) When the grand total mode selector is in the ON position (GT), the counter will count the number of times that the calculation results have been stored in the grand total memory. To print and clear the count, press [GT].

3) The memory item counter will count the number of times that

[+I] or [−I] has been pressed in addition and subtraction.

Note: • The count is printed when the memory is recalled.
• Pressing of [*I] clears the counter.

"•": Neutral

Note: The counter has a maximum capacity of 3 digits (up to ±999). If the count exceeds the maximum, the counter will recount from zero.

⑨

FIRST FACTOR ACCUMULATION SELECTOR:

"FΣ": The first factor is automatically added to or subtracted from the memory. A first factor means the first number in multiplication and division and each number is printed with "xI" and "÷I" respectively.

Ex. 2 x 3 x 5 ÷ 6 =
12 ÷ 7 x 9 =
−56 x 4 x 0.5 =

"•": Neutral

⑩ [▲] **PAPER FEED KEY**

⑪ [→] **LAST DIGIT CORRECTION KEY**

⑫ [GT] **GRAND TOTAL KEY:**

Prints and clears the "GT" memory contents.

⑬ [#/◊] **NON-ADD/SUBTOTAL KEY:**

Non-add – When this key is pressed right after an entry of a number in the Print mode, the entry is printed on the left-hand side with "#".
This key is used to print out numbers not subjects to calculation such as code, date, etc.

Subtotal – Used to get subtotal(s) of additions and/or subtractions. When pressed following [±/=] or [−=] , the subtotal is printed with "◊" and the calculation may be continued.

By pressing this key even in the Non-print mode, the displayed number is printed with "P".

⑭ [*] **TOTAL KEY:**

Prints the total of addition and subtraction with "*". This key also serves as a clear key for the calculation register and resets an error condition.

⑮ [CE] **CLEAR ENTRY KEY:**

Clears number entered prior to use of a function key.
Also used to clear an overflow error caused by an entry.

⑯ [◊I] **SUBTOTAL MEMORY KEY**

⑰ [*I] **TOTAL MEMORY KEY**

⑱ [D] **DATE KEY:**
Can be used to store and display/print or recall the date or any other factor for repeated use in an application.

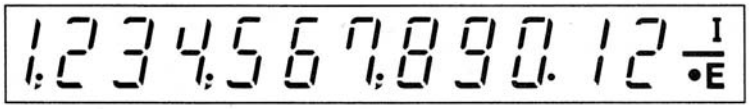
⑲ [AVG] **AVERAGE KEY:**
Used to calculate the average.

⑳ [+/–] **CHANGE SIGN KEY:**
Changes the algebraic sign of a number (i.e., positive to negative or negative to positive).

㉑ [MU] **MULTIPLE USE KEY:**
Used to perform mark-ups, percent change and automatic add-on/discount.

㉒ **DISPLAY**

Display format:
Calculation display (main):



Item counter display (sub):

Symbols:

I : **Memory symbol**
Appears when a number is in the memory.

– : **Minus symbol**
Appears when a number is negative.

E : **Error symbol**
Appears when an overflow or other error is detected.

• : **Grand total memory symbol**
Appears when a number is in the grand total memory.

INK RIBBON REPLACEMENT

1. Remove the paper roll from the calculator. (Tear the paper and remove it from the print mechanism by using [↑].)
2. **Set the power switch to OFF.**
   Make sure that the print wheel has stopped.
3. Remove the printer cover by sliding it towards the back of the calculator. (Fig. 1)
4. Remove the used ribbon.
5. Install the new ribbon.
6. With the black side of the ribbon facing upwards, place one of the reels on the reel shaft on the right. (Fig. 2) Make sure that the reel is securely in place.
7. Thread the ribbon around the outside of the metal guides. (Fig. 3)
8. Insert the right reel securely.
9. Take up any slack by manually turning one of the reels.
10. Replace the cover.
11. Replace the paper roll.

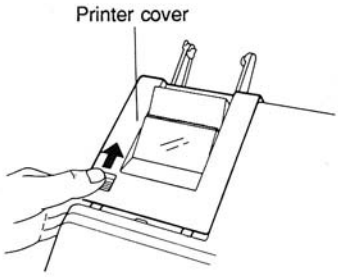


Fig. 1

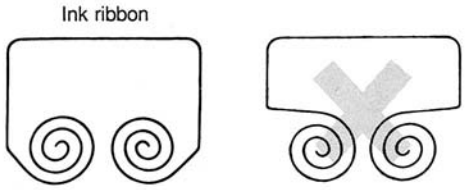


Fig. 2

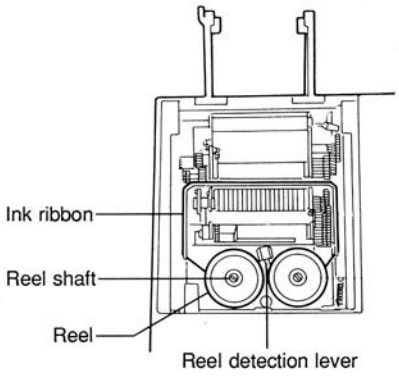


Fig. 3

PAPER ROLL REPLACEMENT

1. Remove the printer cover.
2. Assemble the paper holder. (Fig. 1)
3. Replace the printer cover.
4. Place the new paper roll in the holder at the back of the calculator. (Fig. 2)
5. Fold the leading edge of the paper roll 3 cm to 5 cm. (Never fold it slantwise.) (Fig. 3)
6. Insert the leading edge of the paper into the opening directly behind the print mechanism. (Fig. 4)
7. Press [M+]. (Fig. 5)

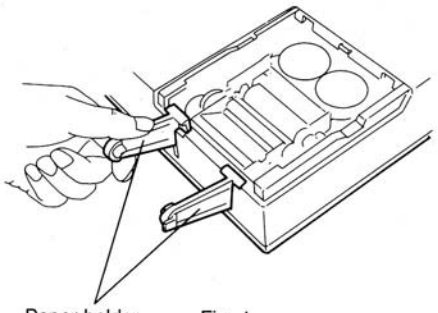


Fig. 1

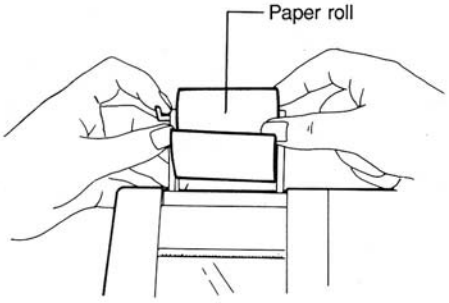


Fig. 2

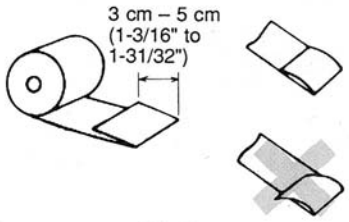


Fig. 3

Fig. 4

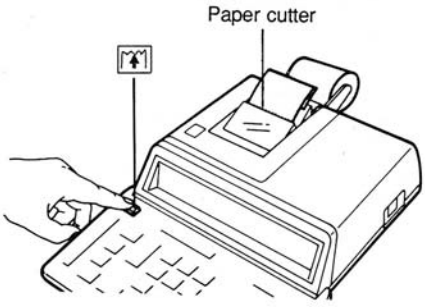


Fig. 5

ERRORS

There are several situations which will cause an overflow or an error condition. When this occurs, the error symbol "E" will be displayed and all keys will electronically lock. The contents of the memory at the time of the error are retained.
If an "0·E" is displayed at the time of the error, [*] must be used to clear the calculator. If an "E" with any numerals except zero is displayed, the error may be cleared with [CE] or [→] and the calculation can still be continued.

Error conditions:

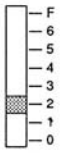
1. Entry of more than 12 digits or 11 decimals.
   This error can be cleared with [CE] or [→] .
2. When the integer portion of an answer exceeds 12 digits.
3. When the integer portion of the contents of the memory exceeds 12 digits.
   (Ex. [*I] 999999999999 [+I] 1 [+I])
4. When any number is divided by zero. (Ex. 5 [÷] 0 [±=])

CALCULATION EXAMPLES

1. Set the decimal selector as specified in each example.
   The rounding selector should be in the "5/4" position unless otherwise specified.
2. The grand total mode selector, constant mode selector, add mode selector, item count mode selector and first factor accumulation selector should be in the "•" position (off position) unless otherwise specified.
3. Print mode selector should be in the "P" position unless otherwise specified.
4. If an error is made while entering a number, press [CE] or [→] and enter the correct number.
5. Negative values are printed with "–" symbol in red.

Note: All totals and sub-totals may be used for further calculations. **RE-ENTER** the number into the calculator by using a **FUNCTION** key and continue the problem.

EXAMPLE: (123 + 456) x 2 =

Selector	Operation	Print	Note
	123 [+]	123·00 +	
	456 [+]	456·00 +	
	[*]	579·00 *	
	[×]	❊ 579·00 x	❊ Re-entry of total
	2 [+]	2· =	
		1,158·00 *	

DATE MEMORY

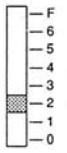
The calculator, provided with date memory, allows date, number etc. to be stored once and then recalled and printed as necessary.

Note: The date memory can also be used as a constant memory.

A. Print the date of March 5, 1997.

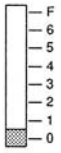
Selector (1)	Operation (2)	Display (3)	Print (4)
	3.05.1997 [D]	3.05-1997	3·05·1997 (red)
	[*]	0.	0· *
	20 [+]	20.00	20·00 +
	30 [+]	50.00	30·00 +
	[*]	50.00	50·00 *
	[D]	3.05-1997	3·05·1997 (red)

B. 2 x 12.34 =
4 ÷ 12.34 =

(1)	(2)	(3)	(4)	
	12.34 [D]	12.34	12·34	(red)
	↑— Enters numbers into the date memory.			
	2 [×]	2.	2· x	
	[D]	12.34	12·34	(red)
	[±=]		12·34 =	
		24.68	24·68 *	
	4 [÷]	4.	4· ÷	
	[D]	12.34	12·34	(red)
	[±=]		12·34 =	
		0.32	0·32 *	

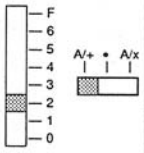
REPEAT ADDITION AND SUBTRACTION

123 + 123 + 123 + 456 – 100 – 100 =

(1)	(2)	(3)	(4)
	123 [±=]	123.	123· +
	[±=]	246.	123· +
	[±=]	369.	123· +
	456 [±=]	825.	456· +
	100 [-=]	725.	100· –
	[-=]	625.	100· –
	[*]	625.	625· *

ADDITION AND SUBTRACTION WITH ADD MODE

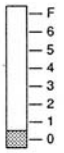
12.45 + 16.24 + 19.35 – 5.21 =

(1)	(2)*	(3)	(4)
	1245 [±=]	12.45	12·45 +
	1624 [±=]	28.69	16·24 +
	1935 [±=]	48.04	19·35 +
	521 [-=]	42.83	5·21 –
	[*]	42.83	42·83 *

* : [·] was not used in the entries.

MIXED CALCULATIONS

A. (10 + 2) x 5 =

(1)	(2)	(3)	(4)
	10 [±=]	10.	10· +
	2 [±=]	12.	2· +
	[×]		12· ◊
		12.	12· x
	5 [±=]		5· =
		60.	60· *

B. 5 x 2+ 12 =

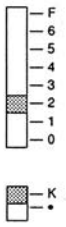
(1)	(2)	(3)	(4)
	5 [×]	5.	5· x
	2 [±=]		2· =
		10.	10· *
	[±=]	10.	10· +
	12 [±=]	22.	12· +
	[*]	22.	22· *

C. $\frac{(5 + 12) \times 3.2 \times 6.7}{2}$ =

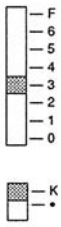
(1)	(2)	(3)	(4)
	5 [±=]	5.00	5·00 +
	12 [±=]	17.00	12·00 +
	[×]		17·00 ◊
		17.00	17·00 x
	3.2 [×]	54.4	3·2 x
	6.7 [÷]	364.48	6·7 ÷
	2 [±=]		2· =
		182.24	182·24 *

CONSTANT

A. 62.35 x 11.11 = ①
62.35 x 22.22 = ②

(1)	(2)	(3)	(4)
	62.35 [×] 11.11 [÷=]	62.35	62·35 x 11·11 =K
		692.71	692·71 * ①
	22.22 [÷=]		22·22 =K
		1,385.42	1·385·42 * ②

B. 11.11 ÷ 77.77 = ①
22.22 ÷ 77.77 = ②

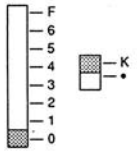
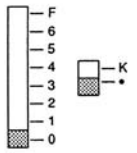
(1)	(2)	(3)	(4)
	11.11 [÷] 77.77 [÷=]	11.11	11·11 ÷ 77·77 =K
		0.143	0·143 * ①
	22.22 [÷=]		22·22 =K
		0.286	0·286 * ②

POWER

A. 5.25^2 =

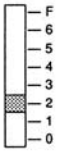
(1)	(2)	(3)	(4)
	5.25 [×] [÷=]	5.25	5·25 x 5·25 =
		27.563	27·563 *

B. 5^3 =

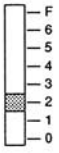
(1)	(2)	(3)	(4)
	5 [×] [±=]	5. 25. 125.	5· x 5· =K 25· ∗ 25· =K 125· ∗
	5 [×] [×] [±=]	5. 25. 125.	5· x 5· x 5· = 125· ∗

PERCENT

A. 100 x 25% =

(1)	(2)	(3)	(4)
	100 [×] 25 [%]	100. 25.00	100· x 25· % 25·00 ∗

B. 123 ÷ 1368 = (%)

(1)	(2)	(3)	(4)
	123 [÷] 1368 [%]	123. 8.99	123· ÷ 1·368· % 8·99 ∗

RECIPROCAL

$\frac{1}{7} =$

(1)	(2)	(3)	(4)
	7 [÷] [÷] [±=]	7. 1. 0.14285714285	7· ÷ 7· ÷ 7· = 0·14285714285 *

SQUARE ROOT CALCULATION

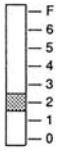
$\sqrt{123{,}456} =$

(1)	(2)	(3)	(4)
	123456 [÷] [±=]	123,456. 351.363	123·456· ÷ 123·456· √ 351·363 *

ADD-ON and DISCOUNT

A. 5% add-on to 100.

B. 10% discount on 100.

(1)	(2)	(3)	(4)	
	100 [×] 5 [MU]	100. 105.00	100· x 5· % 5·00 105·00 *	 Increased amount New amount
	100 [×] 10 [+/−] [MU]	100. 90.00	100· x − 10· % − 10·00 90·00 *	 Discount Net amount

MARKUP AND MARGIN

Markup and Profit Margin are both ways of calculating percent profit.

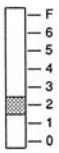
- Profit margin is percent profit vs. selling price.
- Markup is percent profit vs. cost.

- Cost is the cost.
- Sell is the selling price.
- GP is the gross profit.
- Mkup is the percent profit based on cost.
- Mrgn is the percent profit based on selling price.

To find	Knowing	Operation
Mrgn	Sell, Cost	Cost [−=] Sell [±] [MU]
Mkup	Sell, Cost	Sell [±] Cost [−=] [MU]
Sell	Cost, Mrgn	Cost [÷] Mrgn [MU]
Cost	Sell, Mrgn	Sell [×] Mrgn [+/−] [MU]
Sell	Cost, Mkup	Cost [×] Mkup [MU]
Cost	Sell, Mkup	Sell [÷] Mkup [+/−] [MU]

Ex.

Cost	Sell	GP	Mkup	Mrgn
$200	$250	$50	25%	20%

(1)	(2)	(3)	(4)
	200 [÷] 20 [MU]	200. 50.00	200· ÷ Cost 20· %M Mrgn 250·00 * Sell 50·00 GP GP

PERCENT CHANGE

- Calculate the dollar difference (a) and the percent change (b) between two yearly sales figures $1,500 in one year and $1,300 in the previous year.

(1)	(2)	(3)	(4)
	1500 [±] 1300 [−=] [MU]	1,500.00 200.00 15.38	1,500·00 + 1,300·00 − 200·00 * (a) 15·38 %C (b)

PERCENT PRORATION

- Calculate the percentage of each of the parts is to the whole.

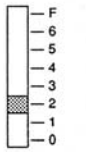
Expenses	%
$ 123	(a)
456	(b)
789	(c)
(D)	(d)

(1)	(2)	(3)	(4)
	[*I] *		
	123 [±=]	123.00	123·00 +
	456 [±=]	579.00	456·00 +
	789 [±=]	1,368.00	789·00 +
	123 [MU]		1,368·00 * (D)
			123· F
		8.99	8·99 %P (a)
	[+I]	8.99 I	8·99 + I
	456 [MU]		456· F
		33.33 I	33·33 %P (b)
	[+I]	33.33 I	33·33 + I
	789 [MU]		789· F
		57.68 I	57·68 %P (c)
	[+I]	57.68 I	57·68 + I
	[◊I]	100.00 I	100·00 ◊ I (d)

* : Press [*I] to clear the memory before starting a memory calculation.

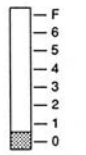
ITEM COUNT CALCULATION

Bill No.	Number of bills	Amount
1	1	$100.55
2	1	$200.00
3	1	$200.00
4	1	$400.55
5	1	$500.65
Total	(a)	(b)

(1)	(2)	(3) (Item counter)	(4)
	✱		
	100.55 ±	100.55 001	100·55 +
	200 ±	300.55 002	200·00 +
	±	500.55 003	200·00 +
	400.55 ±	901.10 004	400·55 +
	500.65 ±	1,401.75 005	500·65 +
	✱	005	(a)
		1,401.75	1,401·75 ✱ (b)

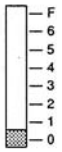
GRAND TOTAL

100 + 200 + 300 = ①
+) 300 + 400 + 500 = ②
+) 500 − 600 + 700 = ③
Grand total ④

(1)	(2)	(3)	(4)
	GT ✱		
	100 ±	100.	100· +
	200 ±	300.	200· +
	300 ±	600.	300· +
	✱	600.•	600· ✱+ ①
	300 ±	300.•	300· +
	400 ±	700.•	400· +
	500 ±	1,200.•	500· +
	✱	1,200.•	1,200· ✱+ ②
	500 ±	500.•	500· +
	600 −=	100.•	600· −
	700 ±	600.•	700· +
	✱	600.•	600· ✱+ ③
	GT	2,400.	2,400· ✱G ④

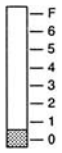
MEMORY

A. 46 x 78 = ①
+) 125 ÷ 5 = ②
−) 72 x 8 = ③
Total ④

(1)	(2)	(3)	(4)
	[*I] *		
	46 [×]	46.	46· x
	78 [+I]		78· =
		3,588.I	3,588· +I ①
	125 [÷]	125.I	125· ÷
	5 [+I]		5· =
		25.I	25· +I ②
	72 [×]	72.I	72· x
	8 [−I]		8· =
		576.I	576· −I ③
	[◊I]	3,037.I	3,037· ◊I ④

* : Press [*I] to clear the memory before starting a memory calculation.

B. (123 + 45) x (456 − 89) =

(1)	(2)	(3)	(4)
	[*I]		
	123 [+I]	123.I	123· +I
	45 [+I]	45.I	45· +I
	456 [±=]	456.I	456· +
	89 [−=]	367.I	89· −
	[×]		367· ◊
		367.I	367· x
	[◊I]	168.I	168· ◊I
	[±=]		168· =
		61,656.I	61,656· *

GRAND TOTAL WITH FIRST FACTOR ACCUMULATION

Calculation of closing inventory

Article	Amount of remainders	Unit price ($)	Sum ($)
A	350	25	(a)
B	136	62	(b)
C	48	120	(c)
D	122	30	(d)
Total	(E)		(e)

(1)	(2)	(3)	(4)	
	GT *I			
	350 ×	350. I	350· x I	
	25 ± =		25· =	
		8,750.• I	8,750· *+	(a)
	136 ×	136.• I	136· x I	
	62 ± =		62· =	
		8,432.• I	8,432· *+	(b)
	48 ×	48.• I	48· x I	
	120 ± =		120· =	
		5,760.• I	5,760· *+	(c)
	122 ×	122.• I	122· x I	
	30 ± =		30· =	
		3,660.• I	3,660· *+	(d)
	GT	26,602. I	26,602· *G	(e)
	*I	656.	656· *I	(E)

SAMPLE APPLICATIONS

1. Set the decimal selector as specified in each example.
   The rounding selector should be in the "5/4" position unless otherwise specified.
2. The grand total mode selector, constant mode selector, add mode selector, item count mode selector and first factor accumulation selector should be in the "•" position (off position) unless otherwise specified.
3. Print mode selector should be in the "P" position.

AVERAGING

Calculate the average of a series of values.

SOLUTION:
1. Add the values to calculate the TOTAL VALUES.
2. Determine the NUMBER OF VALUES.
3. Calculate the average.

FORMULA:

$$\text{Average} = \frac{\text{Total of the values}}{\text{Number of values}}$$

EXAMPLE:

If

Day	Sales
Monday	$123.15
Tuesday	118.00
Wednesday	131.58
Thursday	125.02
Friday	158.25
Total Sales	$656.00 for 5 days

Then Average Sales = $131.20

Note: If you are working in dollars and cents, use the "Add Mode." If not, set the decimal as desired.

Selector (1)	Operation (2)	Display (3)	Display (Item counter)	Print (4)	
F 6 5 4 3 2 1 0	[*]				
	12315 [±]	123.15	001	123·15 +	
	118 [·] [±]	241.15	002	118·00 +	
	13158 [±]	372.73	003	131·58 +	
	12502 [±]	497.75	004	125·02 +	
	15825 [±]	656.00	005	158·25 +	
A/+ • A/x	[AVG]			005	No. of items
				656·00 *	Total sales
IC± • IC+		131.20	000	131·20 AG	Average

COMPOUND INTEREST

Calculate the new balance on a deposit which is compounded quarterly for 4 years at a given annual interest rate.

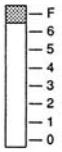
SOLUTION: 1. Calculate the quarterly interest rate.
2. Calculate the new balance (principal plus interest)

FORMULA: New balance = $P\ (1 + i)^n$

Where P = amount of deposit (principal)
i = interest rate per period
n = number of years x 4

EXAMPLE: If P = \$6,150
i = 5% annum ÷ 4 periods = 0.0125
n = 4 years x 4 periods = 16

Then $6{,}150\ (1 + 0.0125)^{16} \doteq \$7{,}502.32$ (New Balance)

(1)	(2)	(3)	(4)	
	.05 ÷	0.05	0·05 ÷	Annual int. rate
	4 =		4· =	
		0.0125	0·0125 *	Quarterly int. rate
	=	0.0125	0·0125 +	
	1 =	1.0125	1· +	
	×		1·0125 ◇	(1 + i)
		1.0125	1·0125 x	
	=		1·0125 =	
		1.02515625	1·02515625 *	$(1 + i)^2$
	×	1.02515625	1·02515625 x	
	=		1·02515625 =	
		1.05094533691	1·05094533691 *	$(1 + i)^4$
	×	1.05094533691	1·05094533691 x	
	=		1·05094533691 =	
		1.10448610117	1·10448610117 *	$(1 + i)^8$
	×	1.10448610117	1·10448610117 x	
	=		1·10448610117 =	
		1.21988954767	1·21988954767 *	$(1 + i)^{16}$
	×	1.21988954767	1·21988954767 x	
	6150 =		6,150· =	Principal
		7,502.32071817	7,502·32071817 *·	New balance

SPECIFICATIONS

Operating capacity:	12 digits
Power source:	AC: 120V, 60Hz
Calculations:	Four arithmetic calculations, constant multiplication and division, power calculation, add-on/discount calculation, repeat addition and subtraction, square root calculation, reciprocal calculation, grand total calculation, item count calculation, markup calculation, average calculation, memory calculation, first factor accumulation calculation, etc.

PRINTING SECTION

Printer:	Mechanical printer
Printing speed:	Approx. 4.5 lines/sec.
Printing paper:	57 mm (2-1/4") ~ 58 mm (2-9/32") wide 80 mm (3-5/32") in diameter (max.)
Operating temperature:	0°C ~ 40°C (32°F ~ 104°F)
Power consumption:	13.5W, 150mA
Dimensions:	250 mm (W) x 315 mm (D) x 76 mm (H) 9-27/32" (W) x 12-13/32" (D) x 3" (H)
Weight:	Approx. 2.2 kg (4.85 lbs.)
Accessories:	1 paper roll, 1 ink ribbon, paper holder and operation manual

WARNING

THE VOLTAGE USED MUST BE THE SAME AS SPECIFIED ON THIS CALCULATOR. USING THIS CALCULATOR WITH A HIGHER VOLTAGE THAN THAT WHICH IS SPECIFIED IS DANGEROUS AND MAY RESULT IN A FIRE OR OTHER TYPE OF ACCIDENT CAUSING DAMAGE. WE ARE NOT RESPONSIBLE FOR ANY DAMAGE RESULTING FROM USE OF THIS CALCULATOR WITH A VOLTAGE OTHER THAN THAT WHICH IS SPECIFIED.

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